



UNITED STATES PATENT

Name of Applicant	Robert Len Aske
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**TITLE OF INVENTION**  
**SAFETY CARTRIDGE**

**CROSS-REFERENCES TO RELATED APPLICATIONS**

This application is entitled to the benefit of the Provisional Patent Application Number 60/400.855, Conformation Number 9832, and Filing Date 08/05/2002. This information relates to Firearm Safety Devices, specifically an improved device for stopping accidental discharging of any firearm.

**FEDERALLY SPONSORED RESEARCH AND DEVELOPMENT**

Not Applicable

**NAMES OF PARTIES TO A JOINT RESEARCH AGREEMENT**

Not Applicable

**MATERIAL SUBMITTED ON A COMPACT DISC**

Not Applicable

## BACKGROUND OF THE INVENTION

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### 1. Field of the Invention

The present invention is related to the field of firearms and firearm safety devices.

### 2. Description of the Related Art

The most widely used gun locks are two piece devices that snap together over a trigger guard and prevent access to the trigger. These devices typically use a pin and tumbler mechanism and are opened by a key. A drawback to this type of lock is the time required to find the key, unlock the guard and then possibly load the gun. In an emergency situation there may not be enough time to perform all these steps.

Another type of lock is inserted into the firing chamber of a firearm preventing chambering of live ammunition. Some of these devices effectively lock only revolvers. Other devices effectively lock only pistols. Most are ineffective in rifles and shotguns. Many of these devices require a special tool for removal requiring time to find the tool and remove the device.

## BRIEF SUMMARY OF THE INVENTION

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My "Safety Cartridge" is designed to be placed in the firing chamber of any gun for the express purpose of keeping anyone that is not aware of its presence from using the firearm. When fired it will lock the firearm up and make it impossible to place live ammunition in the firing chamber. This will protect the gun owner and anyone else including children in the immediate area from harm. In addition it also makes the gun far faster to use for self defense or police action than any gun lock by simply ejecting the Safety Cartridge from a pistol, rifle, or shotgun or by moving it out-of-line in a revolver. My Safety Cartridge is "Flagged" and easily identified by the gun owner as a Safety Cartridge and not live ammunition. A fired Safety Cartridge is very difficult to remove from a firearm but will not cause damage to the firearm. My Safety Cartridge is designed to save lives of children and perhaps the gun owner himself. The Safety Cartridge is only effective as a lock for automatic pistols, revolvers and bolt action, lever action, pump or automatic rifles and shotguns. It is not an effective lock double barrel pistols, rifles, or shotguns.

## BRIEF DESCRIPTION OF THE DRAWINGS

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FIG. 1 Shows a sectioned view of the assembled 9mm Safety Cartridge.

FIG. 2 Shows a sectioned view of the fired 9mm Safety Cartridge.

FIG. 3 Shows the fired 9mm Safety Cartridge.

FIG. 4 Shows a sectioned view of a loaded 9mm pistol which is jammed or locked up by a fired 9mm Safety Cartridge.

FIG. 5 Shows a sectioned view of the assembled .38 Special Safety Cartridge.

FIG. 6 Shows a sectioned view of a loaded .38 Special revolver which is jammed or locked up by a fired .38 Special Safety Cartridge.

FIG. 7 Shows a sectioned view of the assembled .45 ACP Safety Cartridge.

FIG. 8 Shows a sectioned view of the assembled 30-06 Safety Cartridge for a 30-06 rifle.

FIG. 9 Shows a sectioned view of the assembled 12 gauge Safety Cartridge for a 12 gauge shotgun.

FIG. 10 Shows a sectioned view of the assembled .38 Special Safety Cartridge containing a standoff tube to assure proper cartridge length and an o-ring to make it even more difficult to remove from the firearm after it has been fired.

The "Safety Cartridge" is made of five major components, the cartridge case, primer, spring, slug and pin. When all components are assembled and placed inside the firing chamber of any gun you will have a device unseen and its presence only known by the owner of the firearm. In order to understand how the Safety Cartridge works you first need to understand as to how it is made and then what happens when it is fired. The cartridge case is the same cartridge case each gun would normally use. The primer is the same primer each gun cartridge would normally use. The spring is an extension spring which holds the Safety Cartridge together. It contains a double coil first end which is anchored to the cartridge case by the pin and a second straight end which is inserted through the hole in the slug and then bent ninety degrees at the front end of the slug. The Safety Cartridge is placed in the firing chamber of a loaded firearm. If an unauthorized person pulls the trigger of said firearm the primer is initiated causing high pressure primer propellant gases to expand within the Safety Cartridge forcing the slug to move down the barrel. The spring is attached to the cartridge case and the slug and it is transformed from a short extension spring to a longer compression spring resulting in a fired Safety Cartridge length several times as long as an unfired Safety Cartridge.

A sectioned view of my safety cartridge 10 for a 9mm Luger type semi-automatic pistol such as a 9mm Beretta 92FS pistol is illustrated in FIG. 1. The safety cartridge consists of a standard number 100 small pistol primer 1, a standard 9mm Luger cartridge case 2 which has been cross drilled to accommodate a standard type 420 stainless steel 1/16" x 1/2" tension pin 3, a customized extension spring 4 which has been electroless nickel plated to prevent corrosion, and a slug 5 (projectile). The spring 4 contains a double coil 6 on one end which is soldered or spot welded or silver soldered together for additional strength. The spring 4 double coil 6 may be further strengthened by inserting a steel washer between the double coil followed by dipping the double coil end into a solder bath. The safety cartridge 10 is held together by the spring 4 double coil 6 attached to the pin 3 and cartridge case 1 and slug 5 with its bent end 8. The safety cartridge 10 is placed in the chamber of a loaded firearm and may be ejected or by-passed by the gun owner if defensive gun use is required. FIG. 2 and FIG. 3 show the elongated condition of the safety cartridge after initiation and after removal from the gun.

FIG. 4 is a loaded 9mm pistol 30 comprising a spring loaded hammer 31, slide 32, barrel 33, bore 34, chamber 35, frame 36, trigger 37, magazine 38 and handle portion 39. An attempt to fire the pistol 30 by an unauthorized person initiates the safety cartridge 10 causing the resulting primer 1 gases to propel the slug 5 down the gun barrel 33 several inches until the slug 5 is arrested by action of the extension spring 4 which is attached to both the cartridge case 2 by means of the pin 3 and slug 5 by means of the bent end 8 of the spring 4. The safety cartridge 10 has now expanded into and occupies the bore 34 of the pistol 30. Live ammunition 20 contained in the magazine 38 can not be cycled into the gun chamber 35 because the elongated safety cartridge 10 occupies the chamber 35 and bore 34 causing the pistol 30 to jam. The gun owner may remove the fired safety cartridge 10 by removing the loaded magazine 38, pulling the slide 32 rearward and then gripping the cartridge case 2 and pulling it out of the breech with the deformed compression spring 4 and slug 5 attached.

FIG. 5 is a sectioned view of my .38 Special safety cartridge 10A for a .38 Special or .357 Magnum revolver. It contains identical components to the 9mm safety cartridge shown in FIG. 1 except for the .38 Special cartridge case 2A. The .38 Special slug 5 shown in FIG. 5 has the same dimensions as the 9mm slug shown in FIG. 1.

FIG. 6 shows a portion of a .357 Magnum or .38 Special revolver 40 comprising a cylinder 41, chambers 42, barrel 43, bore 44, and frame 45. An attempt to fire the revolver 40 by an unauthorized person initiates the safety cartridge 10A causing it to expand into the bore 44 jamming the revolver 40 by preventing cylinder 41 rotation so that the live ammunition 20A cannot be aligned with the barrel 43. The gun owner may remove the fired safety cartridge 10A from the revolver 40 using the following procedure:

1. Using a wooden pencil, push against the slug 5 and bent end 8 of the spring 4 until the slug 5 enters the cartridge case 2A. This action is facilitated by the chamfer 7 on the rear end of the slug 5 allowing the spring 4 loaded slug 5 to enter the cartridge case 2A.
2. Continue pushing the slug 5 into the cartridge case 2A until the bent portion of the spring 8 aligns with the parting surface between the chamber 42 and barrel 43.
3. At this point, the cylinder 41 which contains several chambers 42 containing the compressed fired safety cartridge 10A and live ammunition 20A may be moved out-of-line with the barrel 43 and frame 45.
4. Once the cylinder 41 is out-of-line, the fired safety cartridge 10A may be removed.

FIG. 7 is a sectioned view of my .45 ACP safety cartridge 10B for semi-automatic pistols such as a Colt .45 ACP Gold Cup, a Colt .45 ACP Lightweight Commander, a .45 ACP AMT Backup, or other .45 ACP pistols and revolvers. It contains identical components to the 9mm safety cartridge 10 (FIG. 1) except for the number 150 large pistol primer 1B, .45 ACP cartridge case 2B, and slug 5B.

FIG. 8 is a sectioned view of my 30-06 safety cartridge 10C for a 30-06 rifle. It contains identical components to the 9mm safety cartridge 10 (FIG. 1) except for the number 103 rifle primer 1C, 30-06 cartridge case 2C, and slug 5C.

FIG. 9 is a sectioned view of my 12 gauge shotgun safety cartridge 10D for a 12 gauge Remington Model 870 pump (or other) shotgun used for hunting, trap shooting, and law enforcement. Since the output of a shotgun primer 1D (such as the Federal number 209A primer) is significantly higher than small and large pistol primers and rifle primers, a larger pin 3D and spring 4D must be used to withstand the higher pressures. Tests showed that a 1/8" diameter (vs. 1/16") pin 3D and a spring 4D with 34 coils (vs. 20 coils) works okay and results in a fired safety cartridge length near 10 inches versus about 3-5 inches for 9mm, .38/.357, and .45 ACP fired safety cartridges. The 12 gauge safety cartridge 10D also requires a larger cartridge case 2D and slug 5D to fit the larger shotgun.

FIG. 10 is a sectioned view of my alternative Preferred Embodiment .38 Special safety cartridge. It is similar to FIG. 5 except it contains an o-ring 12E on the slug 5 and a standoff tube 11E between the spring 4 and slug 5. The standoff tube 11E was found to be required for the .38 Special safety cartridge so that its overall length meets overall length requirements

of 1.550" max. specified by gun and ammunition manufacturers. A standoff tube 11E was not required for my 9mm Luger safety cartridge 10 shown in FIG. 1 or my .45 ACP safety cartridge 10B shown in FIG. 7. Use of a standoff tube for the 30-06 safety cartridge 10C shown in FIG. 9 may be desirable from a producibility / low cost standpoint because its made from low cost plastic tubing and it allows for much shorter slugs [5C (FIG. 8) and 5D (FIG. 9)].

During safety cartridge development, it was decided to machine o-ring grooves in all the slugs for 9mm Luger safety cartridges (slug 5 in FIGS. 1 - 4), .38 Special / .357 Magnum safety cartridges (slug 5 in FIGS. 5 and 6), .45 ACP safety cartridges (slug 5B in FIG. 7), 30-06 safety cartridges (slug 5C in FIG. 8) and 12 gauge shotgun safety cartridges (slug 5D in FIG. 9). These Preferred Embodiment safety cartridges and safety cartridges of other caliber's such as .380 Auto, .40 S&W, 10mm Auto, .44 Remington Magnum, etc. would all be equipped with slugs containing an o-ring groove. O-rings would be provided in the Preferred Embodiment safety cartridge packaging with instructions giving the gun owner the option of installing the o-ring to his safety cartridge. The instructions would state:

"If you elect to install the o-ring to the slug of your safety cartridge, the fired safety cartridge would be much more difficult to remove from your gun and may even require the services of a gunsmith. Using the o-ring improves safety further. It would be nearly impossible for a child or other unauthorized person who has not read the instructions to remove the fired JamIt safety cartridge equipped with the o-ring. The o-ring causes the slug to be stuck in the barrel. Considerable force (up to 100 pounds and more depending on lubrication, interference and rubber hardness) must be applied to the slug to move it out of the barrel."

The Safety Cartridge is packaged with the o-ring separated from the cartridge. If the gun owner decides he wants the increased safety of an o-ring equipped safety cartridge, he would then choose to install the o-ring himself. He would have only himself to blame if he is forced to employ a gunsmith to clear the fired Safety Cartridge from his jammed firearm. If he decides against employing the o-ring, it would be much easier to clear the fired Safety Cartridge from his weapon but less safe. It is very probable that in either case, clearing the weapon of a fired Safety Cartridge will never need to be done .... the need arises only if some unauthorized person tries to fire his gun. One Safety Cartridge should last the gun owner a lifetime since its very unlikely it would ever be used. It should also be emphasized that a fired Safety Cartridge does not damage the firearm in any way.

In summary, safety cartridges are presented for 9mm, .38 Special, .357 Magnum, and .45 ACP semi-automatic pistols and revolvers and bolt action, lever action, pump, or semi-automatic 30-06 rifles and 12 gauge shotguns. Safety Cartridges for other popular caliber firearms can easily be developed and produced. Most of the safety cartridge parts are low cost and standard (primer, pin, cartridge case and o-ring) or common (same spring was common to Safety Cartridges for all handguns and rifles .... had to be lengthened for the 12 gauge shotgun because of increased primer gas output). The slugs were made from red anodized aluminum or white lightweight plastic (Delrin) so the gun owner could visually identify the Safety Cartridge from live ammunition. Extensive testing on lightweight slugs (vs. heavy brass slugs) showed that fired Safety Cartridge elongation is doubled to about 5 inches in pistol and revolver applications assuring a jammed and safe firearm.

Longer fired safety cartridge elongation (7 to 10 inches) was observed for rifles and shotguns due to longer cartridge length and a longer spring specified for shotguns.